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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,987	02/28/2002	James Broc Stirton	2000.092400	1146

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EXAMINER	
PUNNOOSE, ROY M	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 04/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/084,987	STIRTON ET AL.	
	Examiner	Art Unit	
	Roy M. Punnoose	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-25 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 11/28/03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Terminal Disclaimer

1. Receipt of Applicant's Terminal Disclaimer received March 08, 2004 is acknowledged. However, upon review and close examination of prior art/ I.D.S. submitted by the applicant on November 28, 2003, it has been determined that the claimed subject matter of the instant application is disclosed in said prior art.

Therefore, with regret, the Examiner is withdrawing the reasons for rejections of the previous Office Actions. New reasons for rejection of applicant's claims in the instant application are detailed below.

Claim Objections

2. Claims 9, 17 and 25 are objected to because of the following informalities: it is believed that the applicant intended to state that " ... at least one of a drive current [~~and~~] or an operating frequency" in line 2 of said claims. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-2, and 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mundt et al (WO 01/23871 A1).

5. Claims 1 and 5-8 are rejected because:

A). Mundt et al (Mundt hereinafter) discloses a method comprising, providing a library comprised of at least one target optical characteristic trace of a semiconductor substrate such as a semiconductor wafer, said target trace corresponding to a semiconductor device having at least one desired electrical performance characteristic, illuminating said substrate, measuring light reflected off of said substrate to generate an optical characteristic trace of said structure, and, comparing said generated optical characteristic trace to said target trace (see page 3, lines 13-19; Figure 1) to determine the characteristics of said substrate and thereby determine and/or control its quality, in the production of semiconductor devices.

However, Mundt does not teach of providing a substrate having at least one grating structure, said grating structure comprising a plurality of gate stacks in the manufacturing process of a semiconductor device to determine the characteristics of said substrate and thereby determine and/or control its quality, in the production of semiconductor devices.

B). In view of Mundt's teaching of determining the characteristics of one type of substrate such as a semiconductor wafer, it would have been obvious to one of ordinary skills in the art at the time the invention was made to determine the characteristic trace of any other type of semiconductor substrate such as a grating structure with a plurality of gate stacks with any specific dimension in the manufacturing process of a semiconductor device to determine the characteristics of said substrate and thereby determine and/or control its quality, in the production of semiconductor devices. Accordingly, determining the characteristic trace of an alternate material would have constituted obvious engineering expedience for one of ordinary skill in the art at the time the invention was made.

6. Claim 2 is rejected because it comprises of a duplication of Mundt's teachings as disclosed above for different type of characteristics, such as generating a plurality of optical characteristic traces for a plurality of grating structures. In view of Mundt's teaching of determining at least one characteristic trace of a substrate such as a semiconductor wafer, it would have been obvious to one of ordinary skills in the art at the time the invention was made to determine the characteristic trace of a plurality of semiconductor substrates such as a grating structures with a plurality of gate stacks in the manufacturing process of a semiconductor device to determine the characteristics of said substrate and thereby determine and/or control its quality, in the production of semiconductor devices. Accordingly, such duplication would have constituted obvious engineering expedience for one of ordinary skill in the art at the time the invention was made.

7. Claim 9 is rejected because in view of Mundt's teaching of determining at least one type of characteristic of a substrate such as a semiconductor wafer, it would have been obvious to one of ordinary skills in the art at the time the invention was made to determine any other characteristics such as electrical performance characteristics comprising drive current or operating frequency in the manufacturing process of a semiconductor device to determine the characteristics of said substrate and thereby determine and/or control its quality in the production of semiconductor devices. Accordingly, such selection of characteristics to be determined and/or controlled would have constituted obvious engineering expedience for one of ordinary skill in the art at the time the invention was made.

8. Claims 3-4 and 10-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mundt et al (WO 01/23871 A1) in view of Ziger (US 5,607,800).

A). Mundt teaches all claim limitations as disclosed above except for the teaching of adjusting at least one parameter of at least one process based upon the comparison of a generated trace with a target trace in the manufacturing process of a semiconductor device to determine the characteristics of a semiconductor substrate and thereby determine and/or control its quality in the production of semiconductor devices.

B). Ziger teaches of adjusting at least one parameter of at least one process based upon the comparison of a generated trace with a target trace (see col.9, lines 46-58; Figure 8A) in the manufacturing process of a semiconductor device to determine the characteristics of a semiconductor substrate and thereby determine and/or control its quality in the production of semiconductor devices.

C). In view of Ziger's teachings, it would have been obvious to one of ordinary skills in the art at the time the invention was made to incorporate adjusting of at least one parameter of at least one process based upon the comparison of a generated trace with a target trace in the manufacturing process of a semiconductor device to determine the characteristics of said substrate and thereby determine and/or control its quality, in the production of semiconductor devices. Accordingly, such incorporation would have constituted obvious engineering expedience for one of ordinary skill in the art at the time the invention was made.

> **Note:** It should be noted that since the grating structure is a semiconductor device having electrical properties, it would have been obvious to one of ordinary skills in the art at the time the invention was made to merely substitute the optical characteristic trace for a grating structure with electrical characteristic trace for a grating structure so that any electrical defect of the substrate can be determined efficiently and with improved accuracy. Accordingly, such substitution would have constituted an alternative means/obvious engineering expedience for one of ordinary skill in the art at the time the invention was made.

Conclusion.

9. The prior art listed in the attached PTO-892 are made of record and not relied upon is considered pertinent to applicant's disclosure because the claimed subject matter of the instant application is disclosed in said prior art.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Examiner Roy M. Punnoose** whose telephone number is **571-272-2427**. The examiner can normally be reached on 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the applicant can reach his ***Supervisory Patent Examiner***, **Frank G. Font**, at **571-272-2415**.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a **general nature** or relating to the status of this application should be directed to the Group receptionist whose telephone number is **(703) 305-0530.**

Roy M. Punnoose
Patent Examiner
Art Unit 2877
April 15, 2004

Mr. Frank G. Font
Supervisory Patent Examiner